THE VETERINARY RECORD

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EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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"THE PRIVATE HORSE MART."

No. 2 of this new publication has been sent us with a marked paragraph of interest to the veterinary profession. The paper consists of some pages of advertisements of horses. The descriptions of the animals are somewhat imaginative, but a footnote says "The Editor does not hold himself responsible for errors, inaccurate descriptions or alterations of prices." The front page is occupied with Editorial notes, and this is one of them :—

"One correspondent made a most valuable suggestion, namely, that an alphabetical list of towns should be given in "The Mart," and in each one of them the name and address of a Veterinary Surgeon mentioned. Intending buyers could then communicate with a Veterinary Surgeon in the district, and obtain, at a reasonable price, a report on a horse advertised before either inspecting it, or sending a groom to do so. This idea we have vigorously taken up, and the Hunt Secretaries are now being asked to name the Vet. who has the largest practice with the followers of his Hunt. The Secretaries are most kindly giving us this information, and we hope very shortly to publish such a list, the utility of which is likely to be great."

We have no doubt that if this proposal is really put into practice, it will meet with universal objection from all practising veterinarians. Hunt Secretaries may be honest gentlemen, but this new function of "naming the Vet." is one we hope they will decline without pressure from our Registration Committee.

A QUESTION FOR IRISH VETERINARY INSPECTORS.

The following paragraph was contributed to last week's *Lancet* by its "Own Correspondent" from Ireland :—

"On March 21st, at Newtownstewart Petty Sessions, a farmer summoned a servant for leaving his work before his period of hired service was completed. The evidence showed that about Feb. 18th one of the complainant's cows became sick and was brought into the kitchen, where it calved. It remained there for nine days when it died. The milk, which was sent to the creamery, passed through this kitchen, and the servant actually had to sleep in this kitchen. The servant said he had not been in good health, but put up with it as long as he could. The case was dismissed, the defendant being allowed 10s. costs. What is the use of veterinary inspectors when such a state of affairs is tolerated ?"

We are are insufficiently acquainted with Irish regulations to know whether the sanitary conditions of farm kitchens come under veterinary inspection or under medical and sanitary officers, but we think the question forming the last sentence is irrelevent if not spiteful.

PROF. J. A. GILRUTH.

All veterinary surgeons in the United Kingdom will be more than interested to hear that Prof. Gilruth is leaving his tutorial chair at Melbourne University to take up the far wider and more important responsibilities of Administrator of the Northern Territory. To a certain extent there is something to be regretted in the appointment; for it means that a man who has done good work in our profession, and would have done much more had he remained in it, has probably ended his veterinary career. That career, including as it has done the foundation of the State Veterinary Service in New Zealand, has been so brilliant and fruitful that we should have been glad to have retained Gilruth within our own ranks. As that is impossible, we shall all join in giving him our congratulations and best wishes in his new sphere—and it may be added that he has already shown himself possessed of qualities which should ensure his success in it. His past record is that of an able and successful leader and administrator; we anticipate that his future one will be the same.

MENDELIAN EXPERIMENTS.

Mendelism, as applied to horse-breeding, is to form the subject of an investigation under Government auspices. The results may prove of the highest importance ; but the task will certainly be a difficult one, and some time must elapse before it is possible to estimate the progress which is being made. At best, the application of Mendelian principles to animals is much more difficult and complex than in the case of plants—to which Mendel's own work was confined. Again, the great bulk of Mendelian work upon animals has hitherto been limited to the small and quickly breeding species. So far as the larger animals are concerned, such study of Mendelism as relates to them has been much more in the direction of examining existing breeding records than of deliberate and direct experiment. Mendelism, as a whole, is still in its infancy ; as regards horses and cattle it is all but untrodden ground, with the added fact that the length of gestation in these animals must render progress comparatively slow. Still, the ultimate possibilities of Mendelism are so great—even with regard to the horse alone—that the importance of the experiments can hardly be overestimated. In any case, they cannot be without scientific value. They may, in addition, prove of inestimable material value, by initiating a new era of exact and prescient horse-breeding.

OESOPHAGOTOMY IN A DOG.

By H. C. Ganguli, Junr.,

Hospital Surgeon, Bengal Vet. Coll., Calcutta.

About the middle of January of last year a red-and-white terrier dog belonging to a lady was brought into this College Hospital for treatment.

History.—The owner reported that two days prior to its admission it stopped eating suddenly in the course of its usual evening meal (rice and meat) without any appreciable cause, and afterwards continued restless, making frequent attempts to vomit, as though something had stuck in the throat. Next day a swelling in the region of the throat was noticed, the animal did not attempt to take anything and was very restless. It was then taken by the owner to a medical practitioner. Suspecting that it was choked, the practitioner applied a little Tincture of Iodine on the swollen area.

Symptoms.—On admission the animal was extremely dull, and howled, especially when trying to swallow. On examination of the throat it was found to be inflamed, swollen and the surrounding tissues infiltrated with an œdematous exudation, but no obstruction could be felt, nevertheless it was decided to operate and find out the cause of the swelling, as obstruction of the œsophagus was still suspected.

Modus Operandi.—The animal was secured on the operation table in the latericumbent position, the hair of the part was clipped and well asepticised with alcohol Under A.C.E. mixture a clean incision of about an inch-and-a-half long was made in the skin of the superior third of the neck, which exposed the jugular vein and the carotid artery. Retracting them and detaching the œsophageal fascia the gullet was exposed, while another incision of an inch long made in its muscular and mucous coats laid open the œsophagus. Instead of finding any ingested matter, a corroded suture needle of about two inches in length, with a thread of about a foot and a half attached, was found lying in the lumen, and the point was commencing to pierce its way through the coats. After the object was removed with a pair of fine forceps, the the mucous coat was first sutured with fine silk, the lips being inverted, the muscular coat with catgut and the skin with silk. The sutures were painted with collodion and boracic powder, and the part protected by bandages. After recovering from the anæsthetic the animal seemed much relieved, and a dose of ʒii. of Vinum gallici with aqua ʒij. was administered to overcome weakness and exhaustion. The diet was confined to milk and beef-tea.

Next day there was neither rise of temperature nor discharge from the wound. The part was simply bathed with boric lotion, a little boracic powder was dusted over, and bandaged.

On the following day all the skin sutures were removed, leaving a thin line of demarcation between the lips, the part was thoroughly cleansed with 1:1000 of Cyllin solution, and was afterwards dusted over with a little boric acid; the animal seemed much brighter and regaining his normal health.

On the third day the animal was notified as ready to leave, but was not removed by the owner until a few days later, when it had apparently quite recovered.

THE TRANSMISSION OF GALL-SICKNESS BY TICKS.

By Dr. A. Theiler, C.M.G.,

Acting Director of Veterinary Research.

In this paper I understand under gall-sickness the disease of cattle caused by parasites of the red corpuscles, which I called "anaplasms," in analogy to the cause of redwater, known as "piroplasms."

In a previous article * I called it gall-sickness of imported cattle, because in our experience imported cattle suffer from it most frequently, and such cattle, when inoculated against this disease and redwater can be turned out to graze without the risk of contracting more diseases than the native Africander cattle would do, thus indicating that these two diseases are the main sources of losses under ordinary conditions. It is almost superfluous to repeat that Africander cattle are also found to suffer from this disease, but attention must be drawn to the fact that not all the diseases called "gall-sickness" are identical with the one under discussion.

The name "anaplasma" is meant to indicate more than a simple analogy to "piroplasma," it should also indicate that these two parasites are somewhat related, although they are a distinct species. This closer relationship exists in the fact that animals which have recovered from an attack of anaplasmosis (gall-sickness) remain permanently infected, and act as reservoirs just as a "redwater immune animal" does with *Piroplasma bigeminum*. Since such close relationship exists between the two, coupled with the fact that the latter is transmitted by the progeny of the blue ticks (i.e. larvæ originating from mothers feeding on immune or sick animals) it had rightly to be expected that the anaplasmosis would also be transmitted by ticks, and it remained to demonstrate this surmise by actual experiments.

The first investigations of Kilborne and Smith in connection with Texas fever (which disease embraces both redwater and gall-sickness) showed clearly that the latter disease (which was usually complicated with the former one) was transmitted by ticks; according to our present knowledge we must conclude that the same batch of the same species of ticks at one and the same time is capable of transmitting the two diseases, the redwater with its shorter incubation time appearing first, and the gall-sickness following at a later date.

The subsequent experiments will show that also in South Africa the same thing happens with our blue tick (*Rhipicephalus boophilus*), and that with this and another species of ticks, the black-pitted tick (*R. simus*), pure infections with anaplasmosis are possible.

I.

Experiments to convey Redwater and Gall-sickness into a Susceptible English Heifer by means of Blue Tick Larvæ collected from Cattle immune to Redwater and Gall-sickness.

Origin of Ticks.—The mother ticks were collected off Africander cattle running on the pasture adjoining the Laboratory, which animals have to be considered to be immune both to redwater and gall-sickness.

* *Union Agricultural Journal*, January, 1912: "Gall-Sickness of Imported Cattle and the Protective Inoculation against this Disease."

Heifer 787.—An imported Sussex heifer had been kept stabled and tick-free since the date of her arrival (February 20th, 1909). On May 15th, 1909, this animal was infested with a limited number of blue larvæ, the progeny of the above-mentioned adult ticks. Only about 100 larval ticks were placed on the heifer, in order to prevent a gross infestation and a resulting severe attack of redwater.

The larvæ underwent their usual course of development. On the 11th and 12th days after tick infestation the morning temperature stood at 104° F. and 105° F. respectively, but no parasites were found. The redwater parasites were only found on the 26th day and again on the 48th day.

The parasites of gall-sickness (*Anaplasma marginale*) appeared on the 75th day, infecting on this date 4·5 per cent. of the red corpuscles. They increased daily in number, and amounted on the 86th day to 15·4 per cent. A regular fever reaction ensued from the 85th day onwards, lasting to about the 100th day, during which time the lesions of anæmia became very pronounced. The animal finally recovered.

NOTE.—In this animal we have in the first instance an infection of redwater which was only a slight one; it was succeeded by an infection of gall-sickness (*Anaplasmosis*), having a long incubation period (75 days).

II.

EXPERIMENTS TO CONVEY GALL-SICKNESS INTO ENGLISH HEIFERS IMMUNE TO REDWATER BY MEANS OF TICKS COLLECTED FROM A HEIFER IMMUNE TO REDWATER AND GALL-SICKNESS.

(2) *Heifer* 922.—The following is the history of this animal in England:—

Heifer 922—On 16th October, 1909, this heifer received subcutaneously 10 c.c. of blood from calf 211. The temperature in the morning and evening varied only within physiological limits until the morning of 21st October, when it rose to 105° F. Blood smears taken at this time showed no parasites.

The animal immediately received subcutaneously 1 gramme of trypan blue dissolved in 150 c.c. of water. On the evening of the 21st October the temperature was still 105°F. and the blood smears were negative. On the morning of the 22nd October the temperature had fallen to 102.6° F. In the evening of the same day it was 102° F., and from this time onwards until the 5th November it varied only between 101.2° F. and 102.2° F. Blood smears were examined daily, but no piroplasms could be found until the 28th October, that is to say, twelve days after inoculation and seven days after the rise of temperature. On the morning of the 28th October a very few red-water parasites were present in the blood smears; temperature, 102° F.

No piroplasms were present in the blood smears taken on the 2nd November. A few were found in blood withdrawn on the morning of the 3rd November. They could not be found in the smears of blood withdrawn in the evening of the same day. From that time up to the 5th November the examination of this heifer's blood gave negative results.

NOTE.—Heifer 922 was subsequently exported to South Africa, and arrived at the Laboratory on the 13th December 1909. She was immediately placed in a tick free stable and temperatured twice daily.

No abnormal records were noted during this observation period.

Treatment:—On the 1st March, 1910 (seventy-seven days after arrival, heifer 922 was infested with a considerable number of blue tick larvæ, the mothers of which had been collected off cattle in Natal; the eggs from which the larvæ emerged were laid at the Laboratory

Remarks:—After an incubation time of ten days, a slight reaction occurred lasting for four days, with a maximum evening record of 104° F. Redwater parasites were noted on one occasion only, and then only in exceedingly rare numbers. Some irregular records were noted subsequently, but all blood examinations proved negative.

On the 55th day a reaction started, lasting for 18 days, with high temperatures in the early part of the reaction (105° F. and over), and averaging between 103°–104° F. during the rest of the time. On the 55th day microscopical examination of the blood showed a very few gall-sickness parasites; they were still rare the following day. Two days later their number had reached 8 to 9 per cent. The following day a remission was noted to 2.4 per cent.; they were still rare on the 60th day.

On the 61st day they had increased to 18.8 per cent. and they decreased to 16.3 per cent. the following day. Their number now dwindled down again rapidly, and a corresponding remission in the temperature occurred.

The anaplasms had the character of the variety *centrale*, and the anaemic lesions in the blood were in no way marked; the anaemia was characterized by a slight basophilia, which remained for seven days.

Tests:—Heifer 922 was tested subsequently on two occasions with blood of animals which had recovered from gall-sickness, namely, on the 20th May, 1910, when it was injected with 10 c.c. blood of heifer 928 (an animal immune against red-water and anaplasmosis, variety *centrale*) without any results, and again on the 28th June, 1910, no reaction followed the injection of 10 c.c. blood of heifer 934 (an animal immune to anaplasmosis, variety *marginale*).

NOTE.—The infestation of ticks produced a slight temperature reaction during which a very few redwater parasites were seen. After an incubation period of fifty-five days, a distinct reaction started with anaplasms in rare numbers.

(3) *Sussex Heifer* 925.—The following is the history of this animal in England.

On the 16th October, 1909, heifer 925 received subcutaneously 10 c.c. of blood from calf 211. The temperature varied only within physiological limits until the evening of the 21st October when it rose to 103.8° F. Smears, however, were negative. From the 22nd October to the 1st November the redwater parasites were seen in the blood daily,

NOTE.—Heifer 925 arrived at the Laboratory on the 13th December, 1909; she was immediately placed in a tick-free stable and temperatured twice daily.

Treatment:—On the 1st March, 1910—seventy-seven days after arrival—this heifer was infected with blue larval ticks belonging to the same batch as used on heifer 922 (*vide* previous animal); a fairly heavy infestation was made in this instance.

Remarks:—There was a temperature reaction from the 9th day immediately succeeded by a second reaction, but of an irregular character, lasting up to the 30th day. A few redwater parasites were noted on the 12th day only.

A high reaction set in from the 45th day, with evening temperatures reaching 105.8° F., and followed by irregular records. The blood was frequently examined during this period, but, with the exception of a slight anaemia, it was found quite normal.

It was not until the 114th day that another reaction occurred, whan a few anaplasms of the type *centrale* were found.

Test:—Heifer 925 was tested on the 8th August with blood of heifer 934, an animal immuue to redwater and gall-sickness.

A reaction followed, lasting from the 20th until the 40th day, with exacerbations over 105° F., and during which time anaplasms, variety *marginale*, were found in

large numbers for a few days; they then slowly disappeared, corresponding with the fall of the temperature; the symptoms of anæmia were never strongly pronounced the animal recovering quickly.

The animal was sent to Potchefstroom on the 5th November, 1910, and was still alive on the 31st December, 1911.

NOTE.—In this instance the infestation of ticks produced a reaction during which redwater parasites were noted on one occasion. The irregular reaction was, however, not typical of a redwater infection.

It is possible that the heavy infestation of ticks caused a re-infection with *Piroplasma bigeminum*, from which the animal easily recovered.

In this particular instance the first gall-sickness infection was very slight, and would have passed unnoticed if the examination of the blood had not been continued over a long period. Gall-sickness parasites were found in rare numbers and after a long incubation time of over 100 days. The subsequent injection of blood of heifer 934 (which contained *Anaplasma marginale*) produced a fever reaction accompanied with a large number of parasites.

III.

EXPERIMENTS TO CONVEY ANAPLASMOSIS TO CLEAN SUSCEPTIBLE HEIFERS BY MEANS OF BEUE TICKS ORIGINATING FROM A PURE CASE OF ANAPLASMOSIS.

Origin of the Pure Strain of Anaplasmosis.

Heifer 934.—This animal had been used previously, when as a result of the injection of blood 917 it developed the disease due to *Anaplasma marginale*. Later, as the result of a second injection with blood of heifer 926, heifer 934 developed an attack of redwater, it having been clearly shown that gall-sickness was not complicated by redwater.

Accordingly I expected that by infesting this animal, previous to the appearance of redwater parasites, with blue ticks which were free of any infection, they would only become infected with gall-sickness and would then transmit this disease alone.

On the 27th May, 1911, heifer 934 was infested with blue tick larvæ collected from heifer 931 (heifer 931 was an English beast which had been infested on the 23rd February, 1910, with blue tick larvæ collected from horses; no disease developed in 931 as a result of this infestation, proving that these blue larval ticks were clean).

The infestation of heifer 934 was a fairly heavy one; the engorged females dropped between the 21st and 29th days, and were collected in great numbers.

(4) *Africander Calf* 1168.—Born in the Laboratory stables on the 7th November, 1910, and kept tick-free.

Treatment.—Infested on the 12th Nov., 1910, with the progeny of the blue ticks which had developed on on heifer 934, and whose mothers had dropped from the 17th to 24th June, 1910.

Remarks.—Nothing unusual occurred after this infestation. The engorged ticks commenced to drop on the 24th day; the blood was occasionally examined during this time but with negative results.

On the 52nd day a temperature reaction started, continuing for eighteen days. Although this reaction was well marked, with evening records of occasionally 104° F. it could not be called severe.

Gall-sickness parasites appeared with the rise of temperature, being present in the greatest numbers at the onset of the fever, *i.e.*, infesting 3·3 per cent. on the first day, 7·8 per cent. the second day, 4·7 per cent. the fourth day, 3·1 per cent. the fifth day, 2·2 per cent. the sixth day, 1·9 per cent. the seventh day, 1·2 per cent. the eighth day, and remaining at about 1 per cent. throughout the remainder of the reaction.

NOTE.—As was expected in this case, a pure infection of gall-sickness was transmitted by means of the ticks.

In order to prove that calf 1168 was a pure infection, unaccompanied by anything else, the calf was tapped and 5 c.c. of fresh blood was injected into English heifer 1217.

Test of blood of Calf 1168.

Heifer 1217 arrived at the Laboratory from England on the 9th January, 1911, and was immediately placed in a tick-free stable. The temperature remained within physiological limits during the time of observation.

Treatment.—Injected on the 25th January, 1911, (sixteen days after arrival) with 5 c.c. blood of calf 1168

Remarks.—A temperature reaction set in from the 22nd day, with evening exacerbations to 105° F. on the 25th and 26th days, and returning to normal on the 31st day; gall-sickness parasites were noted on the 22nd day, increasing in numbers during the succeeding days.

On the 26th and 27th days the lesions of anæmia were noticed. From the 27th until the 44th day anaplasms were found in rare numbers.

Test for Redwater Immunity.

Injected on the 24th April, 1911, with 5 c.c. blood of heifer 1216, an imported heifer belonging to the same batch as 1217, and which developed a pure attack of redwater as the result of the injection of blood of heifer 926 on the 23rd January, 1911.

Remarks.—There was a sharp rise on the 6th day, reaching 104° F. on the 8th day; redwater parasites were noted in fair numbers on the 7th day. The animal was injected with a 1 per cent. solution of trypan blue on the 8th day, and the temperature dropped to normal the following morning.

Conclusions.—The subsequent inoculation experiments prove that the ticks transmitted a pure infection of *Anaplasma marginale* into calf 1168.

(5) *Sussex heifer* 1218.—An English heifer which arrived at the Laboratory on the 9th January, 1911: she was immediately placed in a tick-free stable and temperatured twice daily. No deviations from a normal record were noted.

Treatment.—Infested on the 25th January, 1911 (sixteen days after arrival), with blue larval ticks from heifer 934.

Remarks.—The adult females were collected from the 21st to 28th day in great numbers; there was one sharp rise of temperature to 103·8° F. on the 22nd day, but blood examinations proved negative. Seventy days after infestation a slight but definite reaction, lasting about fifteen days, ensued. Gall-sickness parasites were noted in the blood for the first time on the 70th day and remained present throughout the reaction.

Test for Redwater Immunity.

On the 24th April, 1911 (eighty-nine days after the tick infestation) heifer 1218 was injected with 5 c.c. blood of heifer 1216 (immune to redwater, *vide* previous test).

Remarks.—A temperature reaction set in from the 8th day, and on the following three days microscopical examination of the blood showed the presence of redwater parasites. The animal was injected with trypan blue on the latter date, when the temperature returned to normal and the blood regained its healthy appearance.

Tests of blood of Heifer 1218.

NOTE.—In order to prove that heifer 1218 was a pure infection of gall-sickness, it was tapped on the 24th April, 1911, and 10 c.c. fresh blood were injected into English heifer 1224.

Heifer 1224 arrived at the Laboratory from England on the 9th January, 1911, and was immediately placed in a tick-free stable. No abnormal temperatures were noted during this observation time.

Treatment.—Injected on the 24th April (105 days after arrival) subcutaneously with 10 c.c. blood of heifer 1218.

Remarks.—On the 18th and following days gall-sickness parasites were detected in the blood, coinciding with the fever reaction which lasted from the 16th to 35th days.

Conclusions.—This case also proves that the ticks transmitted a pure infection of anaplasmosis into heifer 1218.

IV.

EXPERIMENT TO CONVEY ANAPLASMOSIS BY MEANS OF THE BLACK-PITTED TICK.

(6). *Sussex Heifer* 930.—This heifer belonged to the same batch as 922 and 925, but had not been treated in England. She arrived at the Laboratory on the 13th December, 1909, and was immediately placed in a tick-free stable. The temperature was taken twice daily, and no abnormal records were noted.

Treatment.—Infected on the 30th March, 1910 (107 days after arrival), with black pitted larvæ, the mothers of which were collected in Natal.

NOTE.—Black-pitted larvæ do not readily become attached on cattle, but nevertheless a small number were found hanging to the ears the following day.

Remarks.—Nothing unusual occurred in the temperature until about the 75th day, when a gradual rise was noted, developing into a typical curve, and lasting until the 100th day; the fever was at its height between the 83rd and 92nd days, with evening records reaching 105° F. Gall-sickness parasites appeared with the rise of temperature, increasing and decreasing in numbers corresponding with the course of the fever; counting was not undertaken in this instance.

The symptoms of anæmia appeared on the 86th day.

Nothing further happened with this animal, and in order to prove that it was a pure infection of gall-sickness, it was tapped on the 23rd January, 1911, and 50 c.c. fresh blood was injected into heifer 1213.

Test of Blood of Heifer 930.

Sussex heifer 1213.—An English heifer which arrived at the Laboratory on the 9th January, 1911, and was kept in a tick-free stable.

Treatment.—Injected as above (fourteen days after arrival).

Remarks.—A severe temperature reaction commenced on the 16th day, with evening rises to over 105° F., and lasting until the 30th day.

During this period gall-sickness parasites appeared in great numbers, and all the symptoms of anæmia developed. The heifer showed visible symptoms of illness, with pale mucous membranes, refused to feed, frequently lay down, showed hurried respirations, and lost condition.

She was treated, and eventually recovered.

Conclusion.—The black-pitted ticks transmitted a pure infection of anaplasmosis to heifer 930, as proved by the injection of a large quantity of its blood into heifer 1213.

Summary of Conclusions.

Five English heifers and one stable-born Africander calf were used for the experiments; they were all susceptible to gall-sickness (anaplasmosis), two were immune to redwater, having been inoculated against this disease in England.

In all six instances gall-sickness was transmitted. In the first instance both diseases (redwater and gall-sickness) were transmitted to the susceptible heifer by ticks infested with both diseases; in the second instance the ticks transmitted gall-sickness to heifers immune to redwater, and in the third instance ticks were used which originated in the first place from horses, and thereby were freed from any infection of redwater and gall-sickness; these ticks were infected with a pure infection of anaplasmosis, and this pure infection was transmitted to susceptible heifers; the blood of these latter heifers was tested by inoculation, and found to really represent a pure anaplasmosis or gall-sickness infection.

Attention must be drawn to the long incubation time of gall-sickness after tick infection, contrary to a relatively short incubation time after inoculation of the same parasite, of which fact full advantage was taken for inoculation purposes, as indicated in my last article.

This paper should form another illustration of the importance of ticks as a carrier of disease, a disease which attacks practically all cattle born and bred in South Africa, and is responsible for the death of a great number of imported animals. Although I have been able in my previous article to show that it is possible to inoculate against this disease, and thus convey a great amount of immunity, so that such inoculation may be made use of for practical purposes, yet I do not consider that such inoculation is the solution of the problem under discussion. The destruction of the ticks will get at the root of this evil, and the foregoing notes may be considered as a further support of our recommendation for the destruction of all tick life.

MIDLAND COUNTIES' VETERINARY MEDICAL ASSOCIATION.

The annual meeting was held at Birmingham, on Friday, Feb. 23rd, the President, Mr. H. L. Pemberton, of Bridgnorth, occupying the chair. There were also present: Messrs. W. S. Carless, F. L. Gooch, J. A. Gold, W. Ison, F. J. Taylor, L. C. Tipper, R. Cockburn, R. Hughes, W. H. Brooke, F. W. Barling, T. Slipper, J. Malcolm, R. C. Trigger, P. Murray, A. B. Forsyth, J. Martin, B. Devine, Burndred, J. Young, Thompson, J. J. Burchnall, G. Smith, and the Hon. Sec., Mr. H. J. Dawes.

The visitors present were Dr. O. Charnock Bradley, Edinburgh; and Mr. Brittlebank, Manchester.

Apologies for unavoidable absence were announced from Sir John M'Fadyean; Professors Mettam, McCall, Macqueen, Dewar, Penberthy, and Hobday; Dr. Manley and Dr. Gilbert Barling; Messrs. W. Woods, T. H. Hobson, R. L. Forreat, A. Over, W. T. Brookes, H. B. Hiles, W. Hunting, F. H. Gibbings, J. R. Carless, S. J. Marriott, A. W. Mason, W. G. Bowes, A. McCarmick, W. H. Brown, E. Ringer, W. S. Mulvey, T. Chambers, T. J. Brain, A. S. Reynolds, W. W. Grasby, C. E. Dayus, E. O'Neill, C. J. Byner, F. B. Gresham, J. Clarkson, J. Blakeway, J. W. Coe, L. W. Heelis, G. Wartnaby, F. V. Steward, and others.

MEETING OF THE COUNCIL.

Previous to the general meeting, a meeting was held of the Council. Mr. Pemberton presided, and the others present were: Messrs. Carless, Martin, Gold, Gooch, Burchnall, Trigger, Brooke, Malcolm, and the Hon. Sec. They drew up the following report for presentation to the general meeting:—

"The Hon Sec. reported that he had written to members in arrear with their subscription, as ordered at the last quarterly meeting. The result was partly satisfactory. It was resolved that the names of members

who had made no response to this final appeal be read out publicly and struck off the membership roll of the Association. It was further resolved to take steps to recover the arrears. It was also agreed that members in arrear be not allowed in future the use of the Association's instruments.

A letter on the subject of the National Veterinary Association was referred to the general meeting.

It was resolved that the undivided support of the members of the Association be invited on behalf of the candidature of Mr. R. C. Trigger, who is seeking re-election as a member of the Council of the Royal College of Veterinary Surgeons.

Recommendations for the election of officers were considered. In consequence of the indisposition of Mr. H. Thackeray, who is the senior Vice-president, it was recommended that Mr. W. H. Brooke, the junior Vice-president, be elected President, and that a letter be sent to Mr. Thackeray expressing the hope that he may be restored to health and allow himself to be nominated for the chair next year. Other recommendations for office were: Vice-presidents—Messrs. H. Thackeray and J. Martin; Treasurer—Mr. J. J. Burchnall; Hon. Sec. —Mr. H. J. Dawes; Auditors—Messrs. W. S. Carless and R C. Trigger.

It was resolved that the two senior members of the Council retire each year, and not to be immediately eligible for re-election. Messrs. Malcolm and Trigger would accordingly stand down this time, and it was recommended that Messrs. Ison and Devine be elected.

Mr. Brennan Devine has kindly consented to read a paper on "Johne's Disease" at the next meeting.

It was resolved that the next quarterly meeting be held at Stafford."

The minutes of the last general meeting were confirmed.

New Members.

Mr. Ralph L. C. Forrest, of Alcester, on the motion of Mr. Gold, seconded by Mr. Taylor; and Mr. G. Thornton, of Leicester, by the Hon. Sec. (on behalf of Mr. T. H. Hobson), seconded by Mr. Cockburn, were elected members.

Mr. W. G. Thompson, of Stafford, was nominated by Mr. Murray for membership. His name will be submitted to the next quarterly meeting.

Defaulting Members.

Arising out of the report of the Council, the Hon. Sec. was ordered to read the names of those members who were several years in arrear with their subscriptions, and who had made no response to a final appeal for payment.

The President said it was his unpleasant duty to move that those gentlemen be struck off the membership roll. This was seconded by Mr. Burchnall and carried.

The New National Council.

The Hon. Sec. read a letter from the National Veterinary Association, to which this Association has become affiliated, requesting the appointment of representatives to serve on the Council. Each affiliated Society was entitled to be represented by its Secretary and one representative for every 25 members, so that this Association was entitled to elect five representatives in addition to the Secretary.

On the motion of Mr. Tipper, seconded by Mr. Gooch, the Midland representatives were elected as follows:—Messrs. Malcolm, Brooke, Gold, Hughes, and W. S. Carless, together with the Hon. Sec.

Mr. Trigger's Candidature.

The President moved that Mr. Trigger be again nominated as the representative of this Association on the Council of the Royal College of Veterinary Surgeons. Mr. Trigger had represented them well and faithfully for a good many years, and he was a man in whom the entire profession had the utmost confidence.

The Hon. Sec. said he could personally testify to the valuable work which Mr. Trigger had done, and he had therefore the greatest pleasure in seconding the motion. It was the custom of this Association at one time to unite with other Associations for election purposes, but it was a practice with which Mr. Trigger did not agree, because he thought it put the Association to unnecessary expense.

Mr. Gooch having supported the motion in enthusiastic terms, it was carried unanimously.

Mr. Trigger, in acknowledgment, said that this May he would have completed 21 years service as a member of the Council, and under ordinary circumstances he should have asked them to relieve him of the office and give a younger man a chance, but he did not want to retire until the Bill which the Council had in hand was passed, and he was prepared to devote a little more time to fighting in that cause. It was more essential now than ever it was that something should be done to put the Royal College on a better footing financially. They had been obliged to sell more Consols to pay their way, and they continued to have a diminishing income. The inroads which the motor car was making upon private practice was not likely to improve the situation. He regarded it as a very high compliment that he should be the nominee of an influential Association like the Midland, but he did not want them to spend any money on his candidature. He thought the recommendation of the Midland Association, together with his own length of service, would secure his re-election, and except when there was any burning question before the profession he failed to see the wisdom of amalgamating with other societies for election purposes.

Votes of Condolence.

The Hon. Sec. reported that since the last meeting of the Association, they had sustained a great loss by the death of Mr. Butler, of Evesham. He was a man whom everyone respected and looked up to. Their friend Mr. W. S. Carless had also suffered a great bereavement in the death of his son, and he moved that they express to the two families their heartfelt sympathy in their sorrow.

Mr. Gold seconded. He said he once managed Mr. Butler's practice, and he had ample opportunities of recognising his many good qualities.

The vote of condolence was adopted *sub silentio*, and in Mr. Carless's case, he briefly but feelingly acknowledged it.

Treasurer's Report.

The Hon. Sec., Mr. J. J. Buchnall, presented his accounts, which had been duly audited. The total receipts during the past year amounted to £217 14s. 9d. the items being: balance from previous year £163 8d. 3d., members' subscriptions £51; and bank interest £3 6s. 6d. On the expenditure side, the chief items were: annual subscripeion to the Veterinary Benevolent Fund £5 5s.; and Hon. Secretary's outgoings £26 12s. 10d.; the balance to carry forward standing at £178 3d. 2d.

Mr. Burchnall said the balance in hand had increased more than usual during the year, but that was because the expenses had fallen off.

On the motion of Mr. Tipper, seconded by Mr. Gold, the accounts were passed, the meeting expressing the opinion that the finances of the Association were in a very satisfactory condition.

Election of Officers.

Mr. Trigger claimed the privilege, as the oldest member present, to nominate a gentleman for the position of President, and one who, he promised, would do

credit to the Association. He referred to Mr. Brooke. In the ordinary course, their friend Mr. Thackeray, as the senior Vice-president, would have been nominated, but his health at the present time was not as good as it might be, and it was felt by those who knew Mr. Thackeray best that it would be doing him a kindness to defer his appointment to the chair for another year, by which time they sincerely hoped he would be well and strong again. However, it was a matter of satisfaction to them to know that failing Mr. Thackeray they had such a suitable candidate for the office as Mr. Brooke, who was well known to all of them, who was one of the most regular attenders at the meetings of the Association, and who would be able to command the respect and confidence of the whole of the members. (Applause).

The Hon. Sec. said he should like to second the resolution. He had known Mr. Brooke longer, perhaps, than anyone else in the room, for they were near neighbours, and a more honourable opponent in business it would be impossible to find. [That motion was heartily carried].

Mr. Brooke said he was deeply sensible of the honour the Association had conferred upon him, and he would do his best to maintain the prestige of the office, but as he was single-handed in business he might have to fall back on the assistance of other officers, though he was sure he would not be likely to make an appeal in that direction in vain.

Vice-Presidents: Messrs. Thackeray and J. Martin were appointed, on the motion of Mr. Gold, seconded by Mr. Taylor,

Hon. Treasurer: Mr. J J. Burchnall was re-elected.

Auditors: Messrs. W. S. Careless and R. C. Trigger were elected.

Hon. Sec.: Mr. Brooke said that as the President-elect, he would like to have the opportunity of proposing that Mr. H. J. Dawes be re-elected. He knew he would have to rely upon that gentleman for guidance during his year of office and it was an agreeable reflection that the affairs of the Association were in such capable hands.

The motion was seconded by Mr. Martin and carried.

Mr. Dawes in accepting the office again, said it would be 21 years that he had acted as Hon. Sec. and he had enjoyed the work, but whether there would be as much to do now that they were affiliated within the National Association remained to be seen.

The recommendation of the Council that two of their number should retire each year without being eligible for immediate re-election was agreed to.

Messrs. Ison and Devine were accordingly appointed under the new rule, to succeed Messrs. Malcolm and Trigger.

Other recommendation of the Council, as to the subject for discussion at the next meeting, and where it shall be held were also endorsed.

Sales for Agricultural Purposes Bill.

Mr. L. C. Tipper drew attention to certain clauses in this Bill, which he suggested would prejudicially affect the veterinary surgeon. He said that although it was a matter of importance to the profession, probably few members of the Association were aware that it was in contemplation.

Mr. Trigger said he had read the clauses to which Mr. Tipper took exception, and so far as he could see they would not affect the ordinary practitioner in the least. It was food, and not medicine such as a duly qualified veterinary surgeon would prescribe, that was intended. The vendor of food for cattle would have to disclose the nature of, and although the expression "food" in the Bill was meant to include "any condiment or substance used to admix with ordinary feeding stuffs," it could surely not mean medicine or anything intended as medicine for an animal that was sick. So far as he (Mr. Trigger) could see it was a proper Bill to go through. Still it might be well to safeguard their position and try to get an addendum to the Bill specifying that medicines prescribed by a duly qualified veterinary surgeon were not included. He thought that was as far as they could go.

Mr. Tipper: We might ask that any veterinary surgeon should be exempt from its provisions.

Mr. Trigger: No, I don't think so. The moment a veterinary surgeon begins selling food stuffs to anyone who will buy them he becomes a tradesman, and he ought not to be exempted from a food Bill any more than any other tradesman. (Hear, hear).

Mr. Gold said he supported the remarks of Mr. Trigger. As far as he could see, this Bill was not intended to apply to the *bona fide* veterinary practitioner, who prescribed a particular food for an animal in special circumstances. It was meant to apply to the man who sold cattle foods at random, and who was in that way a tradesman pure and simple. It might be a good thing, however, if they asked Mr. Trigger to bring the matter before the Council so that these clauses might be watched during the progress of the measure through the House of Commons. By that means they might be sure that the position of the genuine veterinary practitioner would be safeguarded. (Hear, hear).

Mr. Trigger said it would not be necessary for him to mention the matter to the Council, for their solicitor let nothing of that kind escape his notice and they might be sure he had already had this Bill under observation. He had never found their solicitor asleep yet.

Mr. Forsyth said if a man advertised food stuffs for sale it was quite right that the public should know what they were buying, but he could not conceive that the ordinary practitioner who prescribed this or that diet in a particular case that he was attending would be brought within the provisions of the Bill. (Applause).

On the motion of Mr. Gooch, seconded by Mr. Martin, it was resolved to leave the question to the Council of Royal College of Veterinary Surgeons, who would be alive to anything that affected the profession in the way suggested.

HEREDITY.

Dr. O. Charnock Bradley, Principal of the Royal (Dick) Veterinary College, Edinburgh, delivered an address on the subject of heredity. He said that when he was asked to speak at this meeting on the subject he hesitated for two reasons. In the first place it appeared to him that so specific and complex a subject as that of heredity should be dealt with by someone who had given it that special study which it deserved. Secondly, the subject was such an enormous one that it seemed impossible to deal with it in any degree adequately in a single address.

Two problems alone were sufficient to illustrate the importance of heredity to the veterinary surgeon. What was the relationship of heredity to disease? and how far might acquired characters be transmitted?

Before attempting to make answer to the first question, it was necessary to decide exactly what was meant by "disease." The term was extremely difficult of definition, for the same process might be ranked as a disease under certain circumstances, while under different conditions it would be regarded as normal.

The transmissibility of acquired characters was a matter upon which there had been, and there still was a considerable divergence of opinion. Until it had been definitely decided that the germ-cells were absolutely uninfluenced by the body which acts as their host—and all scientists were not by any means in agreement upon that point—it was dangerous to dogmatise upon the transmissibility or otherwise of acquired characters.

One respect in which breeders and others were liable to fall into error was in the direction of forming conclusions from too scanty data. Laws could be most securely founded upon the collation and analysis of extensive statistics. Masses rather than individuals were of value in the formulation of laws. There could be little question that breeders and others attached undue and dangerous importance to individual cases.

It was because of a lack of sufficient and reliable statistics that genetics could speak with so little assurance regarding many points of heredity as it affected domestic animals. Farm-stock, moreover, offered difficulties inasmuch as there were so few sharply defined characters, and such a diverse mixture of latent strains. Because genetics hesitated in answering many problems related to farm-stock, the science need not be condemned as useless. Genetics was young and had a great future.

One matter of enormous importance upon which much work had been done, and much remained to be done, was that of deciding in how far the capacity for "performance" was heritable. In Denmark, in particular, it was held that cows capable of giving a large milk-yield could transmit this capacity to their offspring. On the other hand, certain recent observations conducted by Raymond Pearl on the egg-laying capacity of hens, did not point so certainly to the transmissibility of capacity for performance.

Inheritance might manifest itself in three, or possibly four, main ways. In the first place there was the mode of "blended inheritance," by which the characters of both parents were so transmitted that the offspring presented characters almost or quite equally compounded of those of the two parents. Blended inheritance was not necessarily stable; but it might be so, as instanced by certain cross-bred sheep which breed true

The mode of "exclusive inheritance" resulted in the production of offspring which resembled one parent (absolutely prepotent) to the exclusion of the other. It did not follow, however, that the so-called excluded character was not present in the offspring. It might be merely dormant, and capable of re-appearance in the next generation.

"Particulate inheritance" was illustrated in the old English sheep-dog, where one eye might be paternal, the other maternal. Here both parental characters were present but had not mixed.

Regressive inheritance and filial regression were of prime importance to the breeder, for it had been shown that there was a constant tendency to return to the mean. Exceptional parents do not necessarily produce exceptional offspring, because of this innate inclination towards the mean.

From this point Dr. Bradley continued his address with the aid of lantern-slides, which illustrated the history of the germ-cells, their behaviour in development and their relation to heredity.

Mr. MALCOLM said that as it was at his suggestion that Dr. Bradley had come to address them on that most interesting topic, he considered the members present were under a debt of gratitude to him. He was much interested in what Dr. Bradley had said about the possibility of the inheritance of acquired character. It was a most important point. A veterinary surgeon examined horses, and it became very often a question whether the characters they saw were solely the result of heredity. A great many of their leading sociologists seemed to follow Weissmann, and others shared with Professor Bradley the view that it was possible for the influence of environment to be so reflected on the germ cells that characters acquired during the life time of the parents may be transmitted to the offspring. Professor Bradley also touched on the question of performance, referring especially to eggs and milk. He (Mr. Malcolm) was no authority on poultry, but he had paid a great deal of attention to the question of milk production, and he was one of those who thoroughly believed that there was as much evidence of heredity in milk production as in anything else. The inheritance of milking qualities was a matter of practical value to the farmer, and he believed that if they got a cow of a very good milking strain, even if she was not one of the best milkers herself, she would follow into line and produce good milking stock. The truth of that had been proved by the Danes, who had paid a great deal of attention to the question in recent years, with the result that they were now taking the lead in the dairying world. By the process of careful selection, the Danes had made their milking cows equal, if not superior to any in the world, breeding only from those that came up to a certain standard. He was interested to observe that Dr. Bradley was not so wholehearted a believer in Weissmann as many Edinburgh people in the past had been. Dr. Bradley had told them that the subject was such an immense one that he had been obliged to leave many aspects of it untouched. He only hoped, therefore, that he would be able to find time to come among them again and complete his remarks, for they had all listened to the address that day with the deepest interest. (Applause).

Mr. GOOCH said he could go all the way with Mr. Malcolm with regard to heredity in cattle so far as their milking qualities were concerned. With regard to the four modes of heredity specified by Dr. Bradley, the breeding of pigs furnished them with good illustrations. It was a known fact that if they got a pure white gelt and mated it with a pure white boar the offspring was pure white, but if they mated it with a black boar they could never in future get anything but mixed colours. With regard to performance, he thought it had been very much emphasised in the report just issued in the Shire Horse Society's Stud Book, where they had the number of prize winners put down. If they took Lockinge Forest King, they would see that 98 of his progeny took prizes in the Show ring. Other noted sires with quite as good mares had not produced anything like that number of prize-winning foals, proving what Dr. Bradley had said—that exceptional parents did not necessarily produce exceptional progeny.

Mr. TRIGGER said he should like to add his meed of praise to what had already been said regarding Dr. Bradley's excellent paper. He agreed with those who held the view that the milking qualities in certain strains of cattle were re-producible. Amongst stock there were certain characteristics derived from the parent, and he remembered when he was a boy he could tell which were the offspring of certain dams among the sheep at home. He believed shepherds could tell the different sheep on pretty much the same lines. There was something about the appearance of animals which reminded one of their parents, and he himself had surprised clients before now by telling them what the sire was when he was not supposed to know. The knowledge of eugenics was very important, as it helped them to avoid breeding from unsuitable animals, and the study of it was one which was not only of practical value to the veterinary surgeon and the stock owner generally, but also of absorbing interest. He had very much enjoyed Dr. Bradley's address.

Mr. ISON moved a vote of thanks to Dr. Bradley for his kindness in preparing the lecture for the Association. He said he should like to hear him go still more fully into the subject on some future occasion.

Mr. HUGHES seconded and said Dr. Bradley was known throughout the profession as one of the most capable teachers they had. He went very carefully into everything he undertook, and he had communicated to them that afternoon much valuable information on a subject of the highest importance.

The vote of thanks was heartily carried, and briefly acknowledged by Dr. Bradley.

VOTE OF THANKS TO THE OFFICERS.

Mr. DEVINE said that before they separated they ought to make some acknowledgement of their indebtedness to the Officers of the Association for their services during the past year. Their affairs were in excellent hands, and under its present management the Association was doing much good work among practitioners in the Midlands. He moved that the Officers be accorded a vote of thanks.

This was seconded by Mr. Barling and carried, the President and the Hon. Sec. suitably returning thanks.

THE ANNUAL DINNER.

The meeting was followed by the Annual Dinner, over which Mr. Pemberton again presided. A short toast list was honoured, "The King" being first of all drunk.

Mr. BROOKE gave "The Imperial Forces."

Mr. DEVINE proposed "The Royal College of Veterinary Surgeons." He said they were well represented in Dr. Bradley and Mr. Trigger, who were both held in the very highest esteem in the profession.

Mr. TRIGGER said there was nothing new to tell them so far as the College was concerned. He thought the members knew the position, and in a financial sense it was far from satisfactory. They had £7,500 in Consols and they cost far more than they would realize if they were sold to day. He was really ashamed to be continually parading the poverty of the College before them, but he hoped they all realised that something would have to be done soon if they were to re-habilitate themselves, as the Council hoped they would.

Dr. BRADLEY said he had not been a member of the Council long enough to say much on that subject, but he was pleased to fall in with the President's suggestion that he should propose the next toast, namely, "The Midland Counties' Veterinary Medical Association." He had seen sufficient that day to satisfy him that this Association was in a most flourishing condition, and he believed that if it was conducted on the same lines as at present it would go forward to greater things.

The President and the Hon. Sec. responded in terms that were brief, and the other toast was the "The Visitors," proposed by Mr. Malcolm and responded to by Mr. Brittlebank.

H. J. DAWES, F.R.C.V.S., *Hon. Sec.*

Mendelian Breeding of the Racehorse.

From a special article to the *Sporting Chronicle* by "Mankato" we take the following extract. The whole article is most interesting, and will be found in our contemporary's issue of March 23rd :—

"It is announced that Captain Dealtry C. Part, of the 21st Lancers, has recently placed £10,000 at the disposal of the Department for the purpose of carrying out Mendelian experiments in light horse breeding. With the concurrence of the Board of Agriculture, Captain Part has entrusted Mr. C. C. Hurst, of Burbage, with the arrangement of the details, and it is understood that Mr. F. W. Carter, Superintending Inspector of the Board, will watch the proceedings on behalf of that body. Mr. Hurst, who is better known to horticulturists than to bloodstock breeders and racing men, it would appear, has, after consultation with Professor Cossar Ewart, come to the conclusion that to be in a position to breed light horses with economy, and suitable for military purposes, it will be necessary to form at least one pure breeding (homozygous) strain of thoroughbreds of hunter type, which shall possess speed, weight-carrying ability, and the jumping temperament, and (2) to form at least one pure breeding strain with the characteristics of the old Irish draught or of the old English pack horse. It would appear that, after the true breeding thoroughbred and the true breeding pack horse have been obtained, the two species are to be crossed, and the expectation is that the resulting hybrids will be exactly the material required for military purposes ; that is to say, the offspring will be uniform and intermediate for every character present in the respective pure-bred parents. Presumably these hybrids are not to be crossed *inter se*, or mated with either of the parent forms, lest, being themselves mongrels, they should break up or segregate in various ways, giving a diversity of offspring.

It will, therefore, be seen that the initial part of the scheme falls into two sections. The first, or thoroughbred portion, is generously financed by Captain Part, and, as already stated, is under the direction of Mr. C. C. Hurst. The Irish draught section has for some little time independently engaged the attention of the Department for Agriculture and Technical Instruction for Ireland ; whilst the work of resuscitating the Devon pack horse, now on the point of extinction, has been undertaken by Colonel Stavely, of Holbeton, Plymouth, from whose monograph in the Journal of the Royal Agricultural Society it would seem that it is the intention to cross the few remaining Devon pack mares with Norfolk hackneys, and thus evolve a pure breeding animal of pack horse stamp. Taking the hackney at his value as assessed by our Irish friends, it is not easy to gather how any breed evolved with his assistance can be of use for crossing with the thoroughbred, even if the latter be of Mr. Hurst's proposed new brand. And here for the present we will leave the weightier end of the scheme for breeding army horses, and give a little consideration to the portion relating to the thoroughbred.

TRUE-BREEDING SIRES.

I should first explain that at the meeting of the British Association held at Portsmouth in August Mr. Hurst announced that he had discovered three stallions and four mares which when bred together had given nothing but horses of the 'chaser type, as tested on the racecourse and at the stud. In view of this find he advised the Board of Agriculture to purchase some of the offspring of these animals, with the idea of multiplying the supposed pure 'chaser line. He hoped that in this way he would solve the problem of manufacturing a pure-breeding race of thoroughbred hunters to take the place of the present Premium stallions, which, in his view and Professor Cossar Ewart's, are little more than mongrels, and for this reason unsuitable for siring half-bred stock.

It subsequently transpired that the homozygous or true-breeding sires "discovered" were Red Prince II., Hackler, and Bushey Park, and the true-breeding mares Circe (Play Actor—Mount Royal), Cinnamon (Concha—Mount Royal), Faithful Lassie (Ascetic—Faith), and Athela (Atheling—Aileen Ogue). Well, it should not have entailed a great amount of research to find out that a proportion of the stock of Red Prince II., Hackler, and Bushey Park have won jump races ; that is a matter of common knowledge. Then, in regard to the mares, every pedigree student knows that Flaxman, Old Fairyhouse, Cackler, Flaxseed, and Distaff are by Hackler out of Circe. But he is also aware that Distaff, like her three half-sisters, by Bushey Park, Laveno, and Ireland respectively, have never won, a circumstance to which Mr. Hurst makes no reference. Nor does he explain why Brown Hackle by Hackler out of Cinnamon, should have been able to win little steeplechases whilst her unnamed sister has never seen a racecourse ; or, again, why there should have been such noticeable variability in the offspring of Red Prince II. and Athela.

MISCONCEPTION.

We have been led to understand that the labours of Professor Cossar Ewart and Mr. Hurst, in their search through the Stud Book and "Racing Calendar," re-

sulted in the elimination of many hundreds of heterozygous (not true-breeding) and doubtful animals. But I suggest that the weeding out process might have been carried a little further. To write of replacing the King's Premium horses with animals of the calibre of the produce of Red Prince II. and Athela reveals a lack of practical knowledge, and, to be perfectly candid, it seems that the scheme is founded on a series of misconceptions.

In the first place, it has been assumed that steeplechasers are of a uniform type as regards conformation, whereas the skeleton varies very greatly in different individuals which have been seen in the front rank as jumpers. Cloister, Manifesto, Ambush II., Why Not, Moifaa, and Father O'Flynn, for example, bore no resemblance to each other whatever. Yet they were all Grand National winners. Again, though the gross bulk of the muscles of locomotion is closely related to the size and shape of the bones to which they are attached, the special physiological properties of the individual fibres of which a muscle is composed are not associated with any special skeletal conformation ; that is to say, mere make and shape are no evidence whatever of stamina.

Another mistaken notion is that jumping ability or instinct is represented by a specific Mendelian character. A little reflection will show the falseness of this view. Ability to jump depends not on one but on many characters, and these are transmitted quite independently of each other. It is true that a quick and safe jumper must possess the faculty of rapidly co-ordinating various muscular movements. But this co-ordination is more an acquired than an hereditary character. In other words, if you want "homozygous jumpers," you must have "homozygous jockeys" and "homozygous trainers." Some men can turn any thoroughbred which is not an absolute weed or cripple into a steeplechaser.

It is not quite clear what part the two-year-old filly and the two yearling colts are to play in the scheme. But the information in regard to the brood mares is more definite. These "true-breeding" females are to be put either to St. Aidan or Perigord, with the expectation that about one-half the foals will be of the kind required.

In sending the mares to Perigord or St. Aidan no very original steps have been taken. Seeing that no fewer than 35 of St. Simon's sons were returned as sires of winners of jumping races last year, it is not improbable that a little of the St. Simon "nerve force" and stamina may pass to the offspring of the matrons in question. The unique position in France of St. Simon's son, St. Damien, as a sire of jumpers, taken into consideration with the English records, rather looks as though the Welbeck prince of stallions were entitled to be considered a "true-breeding hunter." Further, as many of Galopin's sons—St Gris, to wit—have sired very high-class 'chasers and hurdlers, he, too, must come in the same category. So, in the nett result, if you want to breed jumpers, either in England, France, or Australia, it is well to tap the Galopin—St. Simon lines.

It is a little unfortunate that in the foreword to the to the scheme it has been somewhat egotistically stated that if in time to come the experiments prove abortive, it will only demonstrate that Mendelism is inapplicable to horse-breeding. In this connection the old proverb concerning catching your hare before cooking it should not be forgotten. Mr. Hurst has not yet "caught" his Mendelian characters in his "homozygous jumpers"; but, so far as can be judged from the racecourse and breeding tests, he has managed to get together a somewhat mixed assortment of transmissible units. Conclusions drawn from very meagre data are at all times useless for scientific purposes, and the fear is that breeders of bloodstock generally, who are as yet inclined to view Mendelian heredity with suspicion, may attach undue weight to the results of these experiments, which, in the very nature of things, are bound to be more or less empirical, and give varying results.

It was amply demonstrated over 50 years ago by Lord Glasgow that one can breed thoroughbreds of almost any size or weight or conformation he pleases, but his Lordship's annual "shooting days" bear witness to the fact that it is not an easy matter to fix the characters associated with speed and stamina in the same carcase as the show ring characters of mere beef and bone. Lord Glasgow during his long life had unlimited means, and scores and scores of brood mares and many stallions with which to experiment ; and one must be sanguine indeed to anticipate that breeding trials repeated on a very minor scale can furnish information which will extend our knowledge.

At the present time there is a sufficient number of thoroughbred horses in the country suitable for siring stock quite good enough for army purposes. The trouble does not lie with the sires, but in the fact that no intelligent agriculturist will undertake to breed horses for army purposes, either from Irish draught, Devon pack, or any other variety of mares, under the present prices paid by the War Office.

Whatever may be the results of the Burbage experiments and Capt. Part's well-intentioned endeavour, this vital point will be left untouched."

REVIEW.

A Manual of Veterinary Physiology.—By Major-General F. Smith, B.B., C.M.G., F.R.C.V.S., F.I.C. Fourth Edition. Demy 8vo., Pp. xij. + 808. Two hundred and fifty-nine illustrations, including one coloured plate. Price 18/- net. Bailliére, Tindall & Cox, 8 Henrietta Street, Covent Garden, W.C.

It is now nearly twenty years since the first edition of Smith's Veterinary Physiology was published. Each of its successive re-appearances has been marked by an increase in size ; and the present fourth edition contains much more than double the amount of literary matter of the first one. We may add that it contains some 90 pages more than the third edition ; and, as it is now printed in smaller and closer type than before, its real increase is even greater than the paging would indicate.

The work, and the peculiar underlying scheme of applying the science of physiology to the problems of daily practice that has always been one of its great merits, is now familiar to all of us. In its present form, when its physiological teaching is deeper and more detailed than ever before, its clinical bearing is perhaps not so immediately evident as in earlier editions ; but nevertheless the deliberate application of physiology to practice is as essential a feature of the book as before. The aim of the work is unaltered ; the only change in it, beyond the necessary bringing up to date, is an enlargement of its scope.

The plan is exactly the same as that followed in the third edition. The book is divided into twenty chapters, varying in length from 6 to 111 pages, and dealing respectively with the blood, the heart, the bloodvessels, respiration, digestion, the liver and pancreas, absorption, ductless glands and internal secretions, the skin, the urine, nutrition, animal heat, the muscular system, the nervous system, the senses, the locomotor system, the foot, generation and development, growth, decay, and death, and the chemical bases of the body. It is characteristic of the author's methods of working that no chapter has escaped a little enlargement, though some have, of course, received much more than others. In

addition to enlargement, the whole text has, of course, been revised; and only a systematic comparison of the present with the last edition, sentence by sentence, will adequately show the scrupulous care with which this has been executed.

The work is such a familiar one that any detailed description of it seems superfluous, except with regard to the additions. There are so many, and include so great a variety of subjects of greater or less importance, that it is impossible to here enumerate them. Two chapters which have received most enlargement are that on the locomotor system—which, by the way, was little altered in the third edition—and that upon the nervous system, which has been extended very greatly. One noteworthy improvement in connection with locomotion is the increased consideration given to "work."

The amount of work to be expected from horses now forms a separate section of ten pages in small type, which is well worth attention. Another new feature is a section on heredity in the chapter upon generation and development, in which the various classic theories are succinctly described, and an excellent though necessarily extremely condensed and elementary account of Mendelism is given. Some of the pathological appendices to various chapters have also been enlarged; and in that upon the heart we note a summary of the revolutionary modern views of human cardiac disease—a subject to which every practitioner would do well to pay attention. Many other similar features could be cited; but the above will serve to exemplify alike the regard paid to modernity, and the progressive expansion which the work continues to undergo with each succeeding edition.

About a hundred fresh illustrations have been added from various sources. All are good—some very good indeed—and we do not see one that is superfluous. Some anatomical ones in connection with locomotion are especially excellent, and useful into the bargain.

The book throughout is a worthy successor to its three well known predecessors. Smith's Physiology has become a classic work to English veterinary readers, and may be trusted to remain so during the author's life time at least. Its first publication in 1892, filled a gap in our literature by meeting the then existent need for an essentially veterinary physiology; and its subsequent reappearances have only strengthened its unique position. No book in the language can compare with it for the use of the professional student; and of no other book on physiology can it be fairly said that it ought to be in the library of every qualified veterinarian. That has been true of preceding editions, and is still more true of this one.

W. R. C.

Vivisection and the Veterinary Profession.

To the Editor of The Referee.

Sir,—I agree entirely with your correspondent, "Pate, J.P.," and congratulate him on his courage in tackling a public evil.

If the Society for the Prevention of Vivisection would take up the question and prosecute in conjunction with the Society for the Prevention of Cruelty to Animals, all unqualified people who use caustic or irritant remedies upon animals, they would certainly relieve more suffering in a day than they ever will under their present policy.

I have had forty years' experience with horses, and hunted a pack of hounds for twelve years, and have rarely known ointment or lotion recommended by a farmer that did not contain an ingredient of a pain-producing character. During the last four years, whilst developing the Transport Sections of Territorial Field Ambulances, I have constantly had to explain how needlessly cruel remedies in common use with horses are, and invariably have ascertained the prescription has been given by a farmer or groom.—I am, sir, yours, etc.,

P. Broome Giles.

Bletchley, March 25.

How the Veterinary Profession is Handicapped.

Sir,—The letter from "Pate, J.P.," will come as an eye-opener to many persons. It is quite time that we required the owners and users of horses and other draught animals to treat their beasts as something more than pieces of machinery. The whole question is purely one of £ s. d. to the owner, and if he can have his animal "cured" at a cheap rate he "won't spend more money. An animal as it grows older, becomes more liable to disease, while at the same time its pecuniary value decreases, so that while the owner does not wish to kill it yet, still he does not care to expend the money upon it necessary if a veterinary surgeon were to be called in. For the poor man, there may be some excuse; for the richer, there can be none. The "minimum wage" of the animal should include skilled attendance when necessary.

Meanwhile, as "Pate, J.P.," points out, the veterinary profession is handicapped to such an extent that it is threatened almost with extinction.

Neither the veterinary nor the medical profession is protected in any way so far as the *practice* of medicine or surgery is concerned. The only thing which has been done in regard to those professions is to prevent unqualified persons from using certain names or titles. This also applies to dentists and to certain other professional or highly skilled bodies of workers.

The Royal Veterinary College gives a first-rate education to its students, one which becomes every day more highly scientific. Its researches into the causation of disease are doing much for the welfare of the human race. It is not to be thought of for one moment that such an institution is to be allowed to languish because its members do their work in a humane and scientific manner. The blacksmith who spoils your motor, if you are fool enough to allow him to try his hand upon it, is the same man, as ignorant, and as self-sufficient, who "doctors" the local horses and does the painful operations which your correspondent speaks of. The treatment required by the case is obvious, and lies in the hands of the public.—I am, sir, yours, etc.

F. R. Humphries, M.R.C.S.

Hampstead, March 26.

Donations to R.C.V.S.

The Secretary of the Royal College of Veterinary Surgeons begs to acknowledge the receipt of the following donation to the College funds from:

Mr. J. M. Christy, Pretoria, S. Africa	£2	2	0
Amount previously acknowledged	10	10	0
	£12	12	0

ARMY VETERINARY SERVICE.

Extract from *London Gazette*.

War Office, Whitehall, April 2.

Territorial Force. Army Veterinary Corps.

A. F. Castle, M.R.C.V.S., to be Lieut. Dated April 3.

Lieut. F. Hogg has been transferred from Aldershot to Dublin.

Lieut. R. C. G. Thwaytes has been transferred from Dublin to Preston.

Capt. H. S. Mosley arrived from India in Transport "Plassy" on April 3, and has been posted to Aldershot for duty.

Personal.

J. A. GILRUTH, M.R.C.V.S.—ADMINISTRATOR.

Prof. Gilruth, Director of Veterinary Instruction at the Melbourne University, has accepted the offer made to him of the post of Administrator of the Northern Territory. The Federal Government has increased the salary, which had originally been fixed at £1500 a year, to £1750, with allowances amounting to £500 a year.

Prof. Gilruth, who is 41 years of of age, commenced his veterinary studies at Glasgow College, his final year being taken in London, where his diploma was obtained in 1892. Soon afterwards, he went to New Zealand as Government Pathologist. In addition to doing excellent work in that capacity, he found time to write upon his investigation of animal diseases, and became well known as an authority on the subject in the scientific centres of the world.

In 1909, he was appointed Professor of Veterinary Pathology at the Melbourne University. Last year, in company with Prof. Baldwin Spencer, he paid a visit to the Northern Territory as a member of a scientific expedition.—(From *The British Australasian* of 21st March.

The late ROBERT LANG, Veterinary Surgeon, Bridge of Weir, has left estate valued at £6100 9s. 11d.

OBITUARY.

WYNDHAM BRYER, M.R.C.V.S., St. George's Terrace, Cheltenham. Graduated, Lond: Dec., 1855.

Mr. Bryer died on March 28th, at 87 Parkwood Road, Bournemouth, from exhaustion following apoplexy Aged 79 years.

J. MCDOUGALL, M.R.C.V.S., 56 Grant St., Glasgow. Glas: Dec., 1892.

Death occurred on April 1st, from cardiac failure Aged 42 years.

EDWARDS.—On the 28th March, at Common Wood, King's Langley, Herts., Georgina Harriett Bowers Edwards, widow of the late Henry Edwards, M.R.C.V.S., of St. Albans, Herts.

CORRESPONDENCE.

ON THE SWALLOWING OF FLUIDS.

Sir,

Under page 616 in this week's *Record* there is a short note with the heading, "A practical method of inducing horses to swallow fluids." The writer states it has been in use a long time. I agree, and thought it was well known in the Profession, having myself adopted it five-and-twenty years ago when first in practice; but, unlike the writer, I fear my patients had to put up with the temporary inconvenience of a *small* quantity of the draught (whatever it might be) being administered per nostril, as my experience was—one never knew what sort of an animal you had to deal with, until you started on him. Also, a rather important point from my old-fashioned ideas of practice; nine times out of ten the groom or attendant never knew what I had done, and consequently regarded me as one of the best men he had ever seen drench a horse; honestly an unmerited distinction, which nevertheless frequently assisted to fill the ledger.

In respect to the quantity of fluid (clean water) a horse can receive per nostril without harm, I hold quite an open opinion on; but I am satisfied that it is far more than most persons might think. I well recollect a case of a hunter mare on whom I performed a tracheotomy; she was hunted for years after, and I frequently was asked to remove granulations from the inside of the tube; on many occasions I noticed when that mare drank a bucket of water a quantity always found its way into the trachea and trickled out at the tracheotomy opening. Whether this is a condition all bad roarers are s ubject to, I know not. If so, all I can say is, those who do not have the trachea opened must have a considerable quantity of water enter the lung cavity in the course of a twelvemonth.

I fear there is nothing new in what I have written, but should this short note only stimulate the good young men in our profession to make the best of thair powers of observation and also cultivate tact, a valuable trait of character, nowadays, I fear, often neglected, the object of the writer will have been attained.—yours truly,

F.R.C.V.S.

DISEASES OF ANIMALS ACTS 1894 TO 1911, SUMMARY OF RETURNS.

Period.		Anthrax. Outbreaks Con-firm'd	Anthrax. Outbreaks Re-ported	Anthrax. Animals Con-firm'd	Anthrax. Animals Re-ported	Foot-and-Mouth Disease. Out-breaks	Foot-and-Mouth Disease. Ani-mals.	Glanders * (including Farcy) Out-breaks	Glanders * (including Farcy) Ani-mals.	Parasitic Mange. Out-breaks	Parasitic Mange. Ani-mals.	Sheep Scab. Out-breaks	Swine Fever. Out-break-	Swine Fever. Slaugh-tered. *
GT. BRITAIN. Week ended Mar. 30		22		23				5	11	58	170	4	66	958
Corresponding week in	1911	17		20				4	5			5	51	518
	1910		37		58			6	17			10	16	116
	1909		26		40			16	76			14	33	332
Total for 13 weeks, 1912		325		356				47	105	1518	3553	143	790	9808
Corresponding period in	1911	261		301		1	18	52	184			280	513	5731
	1910		405		498			93	259			283	297	2210
	1909		359		518			147	522			370	366	3209

* Counties affected, animals attacked: London 9, Warwick 2.

Board of Agriculture and Fisheries, April 2, 1912.